CHAPTER 2
DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

INTRODUCTION

This chapter describes SPPCo's Proposed Action to construct, operate, and maintain a 120 kV overhead transmission line from the Tracy Power Plant, east of Sparks, through the Spanish Springs Valley, and into the Stead area of Reno. The proposed transmission line would be approximately 34 miles long and would cross approximately 12 miles of public land, 18 miles of private land, and 4.4 miles of land owned by the Airport Authority of Washoe County. SPPCo also proposes to construct two substations on private land and to modify an existing substation as part of this action.

Following the Proposed Action, the chapter describes the alternative selection and evaluation process and the six alternatives considered for detailed analysis, including the No Action Alternatives. Alternatives considered in this EIS are based on issues identified by BLM and Cooperating Agencies, as well as comments received during the public scoping process. Alternatives are intended to reduce or minimize potential impacts associated with the Proposed Action or to respond to relevant policy guidance as issued by the Regional Utility Corridor Report (Regional Utility Corridor Citizens Advisory Committee 2004).

ELECTRICAL SYSTEM OVERVIEW

The key components of the electrical distribution system include generation, transmission, voltage regulation, and distribution to consumers (Figure 2-1). Electricity in the project area is generated at local power plants (including the Tracy Power Plant), and distributed via overhead transmission lines to substations. These substations regulate or reduce the electric voltage to levels that can be conveyed to the customer through 25 kV distribution lines. A detailed description of these

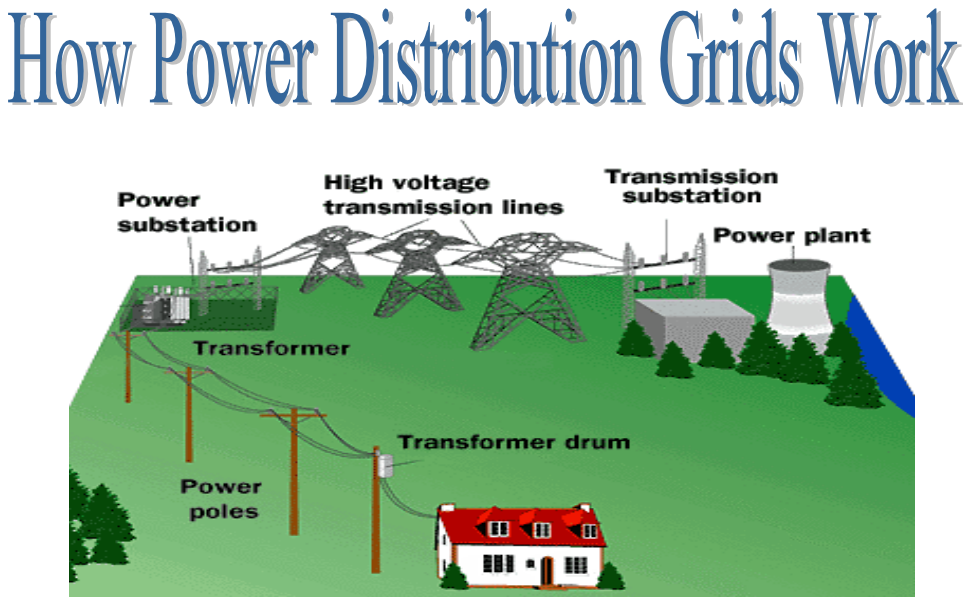


Figure 2-1: How Power Distribution Grids Work

components and SPPCo's electrical system is provided in Appendix A. The Public Utility Commission of Nevada determines electric rate structures.

PROPOSED ACTION

The Proposed Action is to construct a 120 kV transmission line from the Tracy Power Plant through the Spanish Springs Valley and to the Stead area (Figure 2-2). The Proposed Action also includes constructing two new electrical substations, one in the northern Spanish Springs Valley (the Proposed Sugarloaf Substation) and a second at the Reno-Stead Airport (the Proposed Reno-Stead Airport Substation). Distribution lines could be constructed in the future to distribute power from the substations, but construction of these lines is not considered part of the Proposed Action.

According to the RUCR, this new transmission line could be eligible to be designated as a utility corridor once it is constructed. However, under the special use permit process and review by the TMRPA, SPPCo will request that the permits allow for only the proposed 120 kV line (excluding the Rocketdyne Line segment).

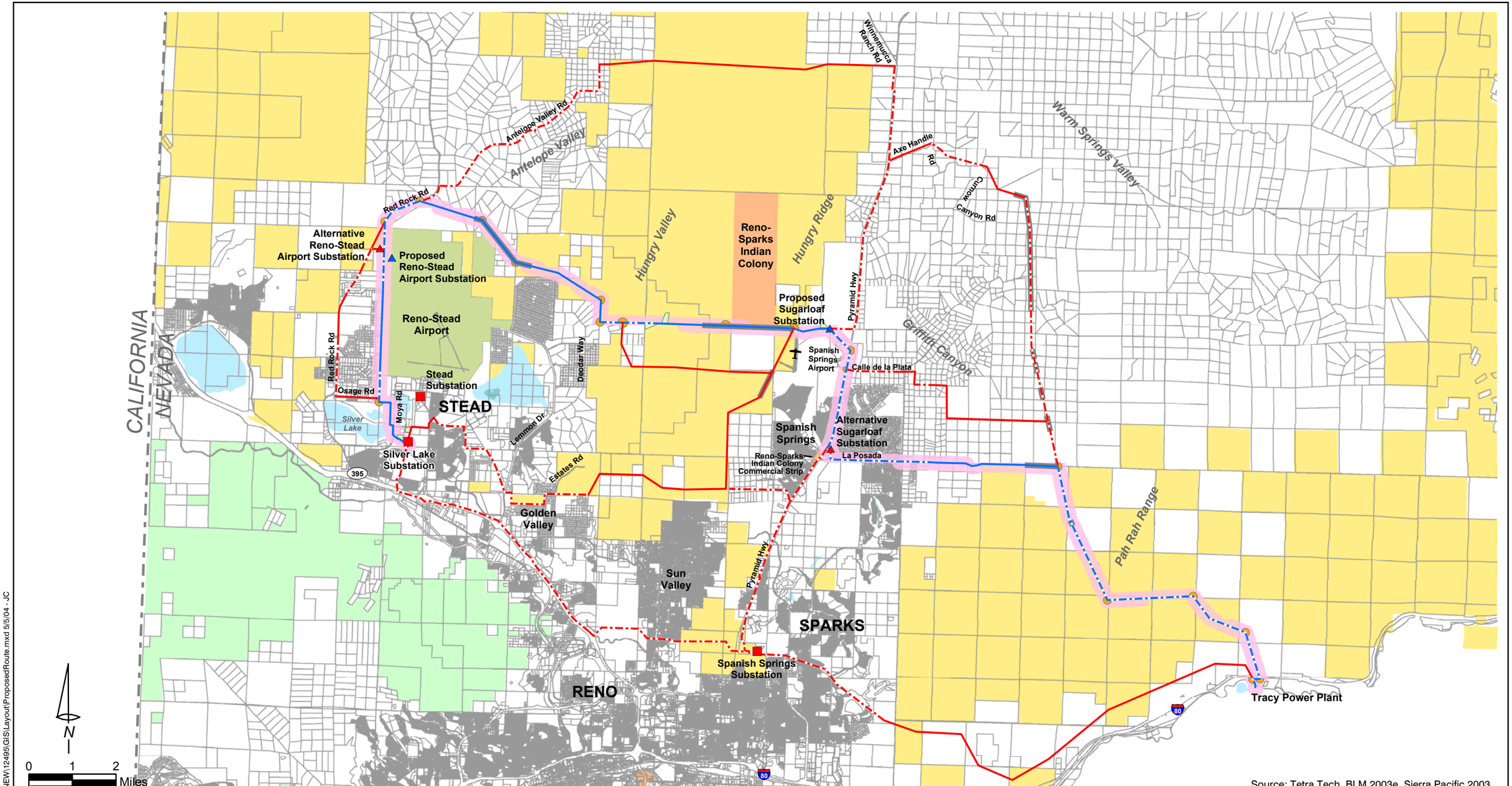
The Proposed Action would be approximately 34 miles long: approximately 12 miles on public land administered by BLM, 4.4 miles on land owned by the Airport Authority of Washoe County, and 18 miles on private land within Sparks, Reno, and Washoe County. The total area of the ROW over the length of the Proposed Action would be approximately 122.68 acres, 37.84 acres of which would be on public land. Where the ROW crosses private land, SPPCo would provide financial compensation for an easement to private owners as determined by a qualified third-party appraiser, through negotiations, or through the courts. About 46 acres of the proposed ROW is located along already disturbed transmission or distribution line routes. The completed project would require a 40-foot-wide right-of-way across land administered by BLM (20 feet on either side of the center line). While the ROW for the public lands would be 40 feet, the area of actual temporary disturbance would average 30 feet wide, and long-term disturbance, primarily from access roads and supporting infrastructure, would average 15 feet wide.

The Proposed Action would be constructed in two phases. In the initial phase, approximately 17 miles of transmission line would be constructed from the Tracy Power Plant to Spanish Springs Valley, where the Proposed Sugarloaf Substation would be constructed. This phase of the project would likely be completed in 2005.

In the second phase, approximately 17.5 miles of transmission line would be constructed from the Proposed Sugarloaf Substation to the existing Silver Lake Substation in Stead, and the Proposed Reno-Stead Airport Substation would be constructed on land owned by the Airport Authority of Washoe County. The second phase of construction would be determined by customer demand in this area but is expected to begin around 2009.

The Proposed Action would follow several existing easements or rights-of-way for distribution lines. In all sections where the proposed route would follow existing distribution lines, the existing distribution poles would be removed and the distribution lines would be transferred to the new 120 kV poles. (See Figure 2-3 for an example of the pole configuration that includes additional distribution lines.) In cases where television or telephone cables are also attached to the distribution poles, the cables may also be attached to the proposed 120 kV poles or may be placed underground along the same alignment. The decision to underground these cables or attach them to the new poles is at the discretion of the cable owners.

Prior to construction, a construction, operation, and monitoring (COM) plan would be developed. The COM plan would outline the specifics of how the proposed project would be constructed and operated and list monitoring measures to ensure all



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Source: Tetra Tech, BLM 2003e, Sierra Pacific 2003

The Proposed Action would be approximately 34 miles long: approximately 12 miles on public land administered by BLM, 4.4 miles on land owned by the Airport Authority of Washoe County, and 18 miles on private land within Sparks, Reno, and Washoe County.

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Legend

Routes

- Proposed Route
- Proposed Route (incorporating existing line)
- Alternative Route
- Alternative Route (incorporating existing line)
- 120 kV Single Circuit Transmission Line

Other Features

- Existing Substation
- Proposed Substation
- Alternative Substation
- Stringing Areas
- Staging Areas
- 600ft Study Area

Land Status

- Bureau of Land Management
- Native American Reservation
- Private
- County/City Parks
- US Forest Service
- Airport Authority of Washoe County
- Water

Proposed Action

Tracy to Silver Lake 120 kV Transmission Line

Washoe County, Nevada

Figure 2-2

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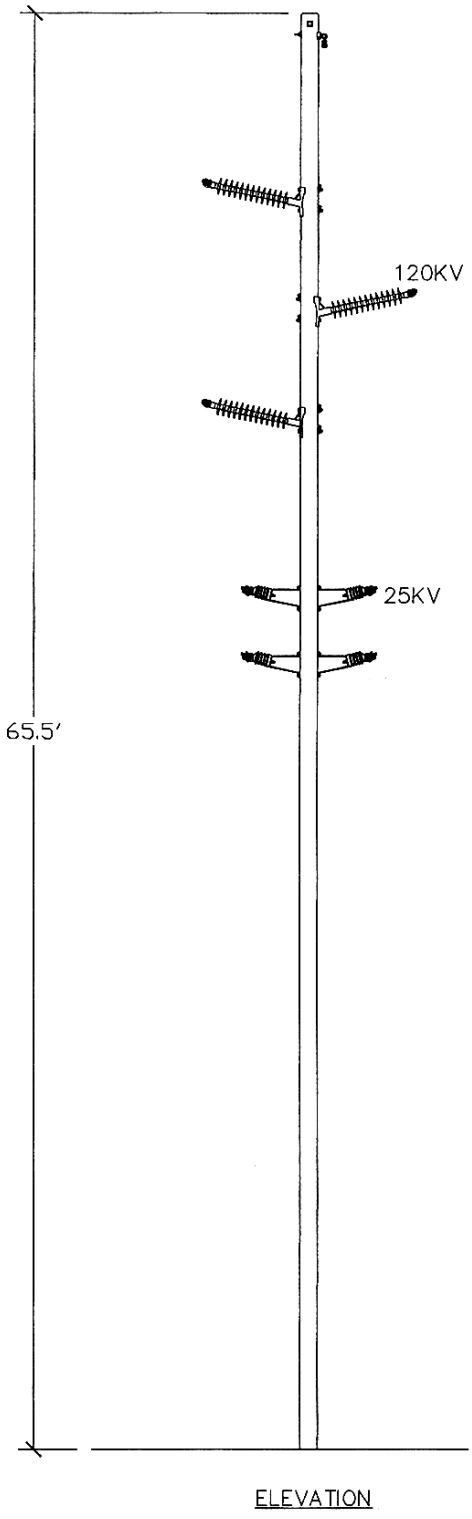

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120 kV poles are typically 70 feet tall, although pole heights may vary from 50 to 90 feet in order to avoid obstructions or to account for variable terrain along the route.

Typical Single Pole 120 kV Staggered Underbuild Configuration

Washoe County, Nevada

Figure 2-3

Tetra Tech, Inc.

commitments are fulfilled. In addition, a general spill prevention control plan would be included in the COM plan for the construction of the line and substations. However, this project would not fall under 40 CFR part 112, which requires a formal spill prevention control and countermeasures plan (for the substations only) until after the substations were in operation. This plan would be prepared once the substations were energized.

The Proposed Action would be built using best management practices (BMPs), as defined by the Nevada State Conservation Commission (1994), and in accordance to all relevant codes (e.g., National Electric Safety Code and Uniform Building Code). Qualified specialists would be employed during the construction to address special site conditions, such as geotechnical engineers plan and design for slope stability and seismic events.

Construction of the transmission lines along the Proposed Action route is expected to cost about $9.4 million. Electrical Consultants Inc. conducted an independent review of the Proposed Action and developed cost estimates for installing overhead and underground 120 kV transmission lines (ECI 2003). The estimates are based on industry standards, actual costs from other similar construction projects, and local specific costs, such as labor and local taxes or other municipal charges. Material costs, such as the price of poles, insulators, and underground cable, were obtained from manufacturers using SPPCo construction standards. The estimate does not include the cost of obtaining rights-of-ways, permitting, acquiring property, or other extraneous requirements. As shown in Table 2-1, underground construction is the most expensive option, primarily a function of trenching and the required underground infrastructure. The overhead costs vary depending on if there is an underbuild or double circuit component. The overhead costs are for rural construction, with urban construction increasing the cost by about 20 percent. Depending on the route, certain existing power lines must continue to be energized (carrying power) during construction. Rebuilding a double circuit pole with an energized line would increase the cost; varying from 2.5 to five times the cost dependent upon the voltage of the energized line, configuration of the existing line, and whether the new line is located 10' from the existing line, or on the same center line. Likewise, the voltage of the existing line would influence cost, such that double circuiting a 345 kV line would be more expensive than a 120 kV or 60 kV line.

Proposed Route

The transmission line would begin at the Tracy Power Plant, located approximately 10 miles east of Vista Boulevard within the city of Sparks sphere of influence. The line would cross the Truckee River and Highway 80 before proceeding northwest through the Pah Rah Range along an existing SPPCo power line (the Rocketdyne line, also known as the Warm Springs distribution line). Although the Rocketdyne line is permitted as a 60 kV transmission line, it is currently operated as a 25 kV distribution line and is not designated as a regional utility corridor. Most of this segment would be on public land.

Table 2-1
Construction Line Costs Per Mile

Type of Construction	Cost Per Mile
Underground 120 kV Transmission	$1,697,199
Overhead 120 kV Transmission[1]	$223,996
Additional Cost for Distribution Underbuild[1]	$53,154
Double Circuit 60-120/120 kV Transmission[1]	$405,889

Source: ECI 2003

[1] Assumes all single wood pole construction with horizontal post insulators and that rights-of way could be acquired for the guying of line angle and dead-end structures.

After approximately eight miles, the line would turn west toward the Spanish Springs Valley. The line would be located on private land within Washoe County, along an existing distribution alignment on the south side of La Posada Drive. A portion of the alignment along La Posada would be located within Sparks. The line would continue north from La Posada along Rockwell Boulevard, across a vacant lot near Virgil Drive (the Alternative Sugarloaf Substation location), to Pyramid Highway. The proposed route would continue north along the east side of Pyramid Highway, following an existing distribution line. The route would cross Pyramid Highway and follow County Road 210 to the site of the Proposed Sugarloaf Substation near the Rocky Acres gravel pit. This would represent the completion of the first phase of the Proposed Action.

During the second phase of the Proposed Action the route would continue west from the Proposed Sugarloaf Substation over Hungry Ridge and into Hungry Valley. The route would travel along the southern boundary of the Reno-Sparks Indian Colony (but not on colony lands) and into Lemmon Valley, incorporating a section of an existing distribution line east of Deodar Way. Most of this segment of the route would be located on public land. Near Deodar Way the line would turn northwest and continue across the north end of Lemmon Valley to Red Rock Road. North of Oregon Boulevard the route would cross onto private land within Washoe County.

At Red Rock Road the line would turn southwest and incorporate the existing distribution line on new poles along the south and east side of Red Rock Road, into Reno, and to the Proposed Reno-Stead Airport Substation. From here, the line would continue south along the western edge of property owned by the Airport Authority of Washoe County, within Reno, around the north and east sides of Silver Lake, and across Moya Boulevard to the existing Silver Lake Substation near Resource Drive.

Transmission Line

The proposed transmission line would require installation of approximately 610 primarily single wood poles (Figure 2-3), approximately 70 feet tall, although pole heights may vary from 50 to 90 feet in order to avoid obstructions or to account for variable terrain along the route. Taller support poles may be required to accommodate highway crossings, unique geographical features, or existing overhead utilities. Shorter poles (50 feet) would be used adjacent to the Stead and the Spanish Springs airports to avoid interference with established takeoff and approach paths. The span between poles would typically be 300 feet but could range from 50 feet to over 600 feet, depending on obstructions or terrain.

Poles would be directly set into the ground with native or imported material used as backfill. Guy wires and soil anchors would be installed where the line turns to counter changes in wire tension from changes in direction. Self-supporting steel angle poles on concrete foundations would be installed at locations where anchors could not be installed, such as when there is roadway interference. Steel poles would have self-weathering (rusty brown) finish to match the wood poles (see Figures 2-4 to 2-7). Sierra Pacific has estimated how many steel angled poles might be needed along each alternative route shown in Table 2-2.

The poles would typically support three- to seven-stranded aluminum conductor wires, including transmission lines approximately 1.2 inches in diameter, and in some areas, distribution lines approximately 0.5 inch in diameter. All conductor wires would be at least 22 feet from the ground surface. A shield wire approximately 0.375 to 0.75 inches in diameter would be placed along the top of each pole to provide lightning protection. The shield wire could also contain fiber optic cable. Connecting the shield wire to copper ground wires buried in each pole excavation would electrically ground all of the poles.

Figure 2-4: Typical 120 kV Single Circuit Steel Angle Pole

Figure 2-5: Typical 120 kV Double Circuit Steel Angle Pole

Figure 2-6: Typical 120-345 kV Steel Angle Pole

Figure 2-7: Typical 120-345 kV In-Line Steel Pole

Table 2-2
Estimated Steel Angled Poles[1]

Route	Estimated Number of Steel Angled Poles
Proposed	13 single circuit 120 kV
Northern	6 double circuit 120 kV and 15 single circuit 120 kV
Calle de la Plata	14 single circuit 120 kV
Southern	33 double circuit 120 kV and 8 single circuit 120 kV
Foothills	26 double circuit 120 kV and 10 single circuit 120 kV
Existing	38 double circuit 120-345kV steel, 74 double circuit (in-line) 120-345kV, and 9 double circuit 120 kV

[1]The estimated number of steel angled poles that would be used on each route was determined using best professional judgment by SPPCo in February and April 2004.

Substations

Two new substations are included as part of the Proposed Action: the Proposed Sugarloaf Substation, and the Proposed Reno-Stead Airport Substation. The Proposed Sugarloaf Substation would be located on private land approximately 0.75 mile west of Pyramid Highway near the Rocky Acres gravel pit in the Spanish Springs area (Figure 2-8). The Proposed Reno-Stead Airport Substation would be constructed in the northwestern edge of the Reno-Stead Airport on land owned by the Airport Authority of Washoe County (Figure 2-9).

Both substations would occupy approximately 2.5 acres. The substations would initially include one 120 kV line terminal, one 60-Megavoltampere (MVA) transformer to step down the power, and up to three distribution lines. Provisions would be made for an ultimate construction of three 120 kV line terminals, two 60-MVA transformers, a 120 kV capacitor bank, and up to eight distribution lines.

Construction of a substation begins with clearing vegetation and organic matter from the site and roadway. The site is then graded to the subgrade elevation. Structure footings and underground utilities, including an electrical conduit and grounding grid, are installed, followed by aboveground structures and equipment. The site would be surrounded by a wall. The site would be finish graded, gravel surfacing would be installed, and disturbed areas would be revegetated. Landscaping would be used to minimize the visual appearance of the substations consistent with the surrounding area.

Substation design would use low profile substation components, as appropriate. The fencing materials surrounding the area, the equipment, and the structures within the substation would be nonreflective. Equipment would be painted a BLM-approved color to blend in with predominant vegetation and soil types. Existing vegetation outside of the proposed substation site and access road location would be preserved to the extent possible. Night lighting at the substation would be limited to emergency maintenance or repair activities. No night lighting would be used during normal operation of the substation. Figure 2-10 depicts an existing SPPCo substation, which is similar to the substations proposed in the project.

The proposed 120 kV line would also require minor modifications at the existing Silver Lake Substation. These modifications would consist of installing a new 120 kV line terminal, a new cement pad and circuit breaker, and a conduit from the existing control building. All disturbance would occur within the existing substation footprint and upon completion of work, all excavations would be backfilled, finish graded, and covered with gravel.

Figure 2-8: Southwestward view of the Proposed Sugarloaf Substation Location (to be located in the foreground)

Figure 2-9: Southward view of the Proposed Reno-Stead Airport Substation location (to be located in the foreground)

Figure 2-10: Picture of an existing substation that looks similar to the proposed Sugarloaf and Reno-Stead Airport substations

Right-of-Way Preparation

Construction activities, including most access roads, overland travel routes, transmission pole installation, and line stringing, would occur within a 300-foot wide corridor (study corridor). This study corridor ensures that potential impacts to sensitive resources (i.e., cultural resource sites, sensitive wildlife habitats) are identified and avoided prior to construction. To the extent feasible, where sensitive resources are found, an appropriate avoidance area for construction or construction schedule sequence would be delineated. In steeply sloping areas where more space may be required for construction activities or access roads (i.e., due to switchbacks), a 600-foot wide study corridor has been defined (Figure 2-2). A study corridor should not be confused with a ROW, which is an easement, lease, permit, or license across an area or strip of land to allow access or to allow a utility to pass through public or private lands. A study corridor may be larger than a ROW. A ROW is always contained within a study corridor but does not always encompass an entire study corridor. In addition, a construction corridor is an area within the study corridor in which construction will take place. As with a ROW, a construction corridor does not usually encompass an entire study corridor.

In order to access and travel within the construction ROW, SPPCo would use existing roads to the maximum extent feasible. Existing four-wheel drive routes and two track roads might need to be improved by blading to widen the road or curve in order to allow equipment access or the turning radius of truck and flatbed trailer. Turnouts and loading sites may also have to be bladed. Typical road width disturbance would typically be between 20 and 30 feet to accommodate cuts and sidecast material, and would nominally be 20 feet to the greatest extent feasible. Vehicle travel from structure to structure would also occur primarily along the centerline of the study corridor by off-road vehicles. Intermittent blading with bulldozers or equivalent machinery would be required to allow for travel in areas of rough terrain. Surface material, including rock, would be bladed and side-cast to allow for

passage of rubber-tired vehicles. Vegetated areas may be hydro-axed instead of bladed.

Additional roadwork outside of the construction ROW, including creating new spur roads from existing roads, may be required once the final route has been selected and project design has been completed. Any additional disturbance outside the construction ROW would be addressed in the COM plan for the project.

Site Preparation and Excavation

Single in-line poles would typically require 0.4 acre for installation in flat terrain, to accommodate an auger to excavate a hole, 3 feet in diameter by 10 feet deep, a spoils pile, and other associated equipment. Blading of vegetation would be minimized, to the extent feasible. In steeper terrain, an additional area of up to 0.2 acre may be required to create level pads for equipment and pole installation.

Angle poles would typically require 0.8 acre. Angle poles are placed in the ground, as outlined above; however, the poles must be secured (guyed) by anchors installed in the ground approximately 55-feet from the pole base. The anchors would require approximately a 3-foot diameter, 10-feet deep hole. Blading of vegetation would be minimized to the area where excavation occurs. Steel angle poles would only be used in places where guying is infeasible, such as urban areas. Erection of steel poles requires the same level of disturbance as guyed angle poles. Augers and other backhoe-type equipment would be used for pole and soil anchor excavation. Rocks would be drilled and blasted, as encountered and if required. If suitable, native soil excavated at each site would be retained for use as backfill.

Assembly and Erection of Poles

Assembly crews would first transport transmission poles, insulators, hardware, and guy wire anchors to each structure site. Insulators and hardware would be attached to the poles to form a complete structural unit. Anchors would be installed and properly backfilled. Where steel angle poles are required, a concrete foundation would be poured.

Erection crews would follow, erecting the complete poles with a mobile crane. Crane pads would be placed within site preparation area, as outlined above. Previously excavated native or imported material would be placed around each pole and properly compacted. Guy wires to support the angle poles would also be used to plumb the structure.

Conductor and Shield Wire Installation

The installation of conductors and shield wires would involve a three-step process:

1. Installing sock line (wire pull ropes);
2. Pulling conductors and shield wires; and
3. Sagging and connecting conductors and shield wires to the poles.

This process would be performed from stringing areas within the construction ROW. Stringing areas would be approximately 500 feet long and would be located every 5,000 to 15,000 feet, connecting 15 to 50 poles at a time. The frequency of stringing areas would depend on engineering requirements for conductor sagging. Stringing areas located at angle points may extend beyond the standard 300-foot study corridor in order to meet personnel and equipment safety requirements. These extra disturbance areas are shown on Figure 2-2 and labeled as stringing areas.

The sock line is a small wire that is initially spooled out between stringing areas and is used to pull the larger conductor or shield wires onto the poles. A bulldozer, using access roads or overland travel, would pull the sock line to each pole where it would be threaded through pulleys. Once the sock line has been installed on all poles between two stringing areas, it would be attached to reels of conductor or shield wire and pulled through. Enough tension would be maintained to keep the wires above the ground, avoiding any damage due to dragging. After the conductors and shield wires have been strung,

they would be sagged to the proper tension and attached to the insulators.

The sock line would be extended across the Truckee River by hand or with a bow and arrow. SPPCo's contractor may also use a helicopter to string the sock line where steep terrain makes overland travel difficult.

Staging Areas

Project construction would require staging areas to serve as storage and handling sites for construction material, equipment, fuel, service trucks, spare parts, vehicles owned by the construction workers, and possibly portable office space, and for equipment maintenance (although some equipment may need to be repaired at the breakdown location within the project ROW). Six staging areas would be required under the Proposed Action (Figure 2-2). These sites would range in size from 3 to 20 acres and would generally be located in disturbed areas. Staging areas for the Proposed Action would be in the following locations:

- Northeast of the Tracy Power Plant;
- At the Proposed Sugarloaf Substation site;
- In two locations in southern Hungry Valley, north and south of the proposed alignment; and
- In two locations north of the existing Silver Lake Substation.

The staging areas would be restored to the condition they were in prior to the start of construction or as otherwise agreed upon by SPPCo and the property owner. SPPCo would not leave the sites in a condition that would cause nuisance dust or weed infestation. If unspecified by the owner, reclamation would be in accordance with the COM plan.

Right-of-Way Cleanup

Cleanup crews would follow the installation crews and would remove all surplus material, equipment, or construction debris. Removed vegetation would either be shredded and spread within the ROW or would be disposed of off-site, per project requirements. Rocks excavated during access and site preparation would be redistributed within the ROW.

Workforce and Schedule

A general contractor or SPPCo crews would construct the proposed transmission line. The project would be constructed in two phases, as follows:

- Phase 1—Construction of the transmission line from the Tracy Power Plant to Spanish Springs Valley, including constructing the Proposed Sugarloaf Substation; and
- Phase 2—Construction of the transmission line from Spanish Springs Valley to the Stead area, including constructing the Proposed Reno-Stead Airport Substation and modifying the existing Silver Lake Substation.

The peak construction period is expected to last about six months for each phase of construction (assuming overhead construction) and to employ approximately 50 workers. The construction workforce by activity for each phase of construction would break down as outlined in Table 2-3.

Site Restoration

SPPCo's contractor(s) would restore new access roads and travel routes not required for future maintenance. In addition, other disturbed areas, including pole erection sites, stringing areas, and staging areas, would be restored. Native seed mixes as prescribed by the BLM would be planted to revegetate areas disturbed by construction (Appendix B).

Operation and Maintenance

Once the transmission line is operational, SPPCo workers would conduct annual inspections and, if necessary, line maintenance. Annual inspections would be conducted using all terrain vehicles (ATVs), helicopters, or line trucks and generally would follow the centerline travel route used for project construction. Annual inspections are likely to maintain a 12-foot wide two-track road. This road also may be used for required maintenance or emergency repairs.

Table 2-3
Direct Employment from Construction Activities

Construction Activity	Labor Requirements
Support equipment	5
Yard-haul equipment	3
Road improvement and restoration	4
Tower excavation and anchors	12
Tower assembly and erection, guard poles and wire stringing:	
Forepersons	4
Linepersons	16
Apprentices	2
Operators	3
Quality assurance	1
Total	50

Source: SPPCO 2003

In environmentally sensitive areas or areas of steep terrain, helicopters may be used to inspect the line. Ground access to the ROW would be required in these areas for as-needed maintenance and emergency procedures. This access would be coordinated through the appropriate agency personnel. Trees that could interfere with the safe operation of the transmission line would be trimmed or removed as needed over the life of the project. Implementing appropriate procedures and mitigation measures outlined in this EIS would be included in the COM plan.

Hazardous materials would be used during the construction, operation, and maintenance of the project and include acetylene, automatic transmission fluid, Bee Bop Insect Killer, diesel deicer (winter time only), diesel fuel additive (winter time only), gasoline, North Wasp and Hornet Spray (1,1,1-Trichloroethane), Prestone 11-antifreeze, propane (winter time only), paint, Wagner brake fluid, and WD-40.

The quantities of materials used and the locations of use would depend on the final transmission line alignment and substation locations.

ALTERNATIVES TO THE PROPOSED ACTION

This section presents the five alternatives to the Proposed Action, the No Action Alternative, and alternatives considered but eliminated. As part of the NEPA process, BLM is required to identify reasonable alternatives to the Proposed Action that would avoid or mitigate potential impacts of the Proposed Action. BLM developed alternatives to the Proposed Action with input from the following:

- The general public during the scoping period, at the project scoping meetings, during the public DEIS comment period, and during the DEIS public open houses;
- Members of the Washoe County Citizens Advisory Boards (CABs) for the Warm Springs, Spanish Springs, Sun Valley, and North Valleys planning areas;
- Neighborhood Advisory Boards, such as the North Valleys Neighborhood Advisory Board; and
- Representatives of the Cooperating Agencies at a series of project coordination meetings.

In order to determine if an alternative was reasonable for consideration in the EIS, it had to fulfill the following evaluation criteria:

- Reasonably meet the project objectives, as described in the purpose and need;
- Be technically feasible;
- Maximize reliability;

- Respond to concerns expressed by the public during scoping or representatives of Cooperating Agencies; and
- Rely on regional utility corridors to the extent possible, as designated in the RUCR.

Five action alternatives were developed through this process: the Northern Alternative, the Calle de la Plata Alternative, Southern Alternative, Foothills Alternative, and Existing Corridor Alternative (These alternatives are summarized in Table 2-4). In addition, the No Action Alternative is evaluated.

Each alternative evaluated in the EIS offers a complete route option for a transmission line from the Tracy Power Plant to the Silver Lake Substation. However, the Proposed Action and alternatives are each composed of distinct route segments that may be combined in a variety of ways to form alternatives not presented in the EIS. The route that BLM and the Cooperating Agencies ultimately select may be any combination of segments that reasonably achieves the project purpose and need and minimizes the impact to the human and natural environment. Therefore, the alternatives have been assembled to ensure that, regardless of the alignment that is ultimately selected, the EIS will have evaluated the maximum potential for impact along each segment under any possible route configuration. With the exception of staging and stringing areas, which are specific to each route, the transmission line construction, ROW preparation, and restoration activities described above for the Proposed Action would apply to each of the alternatives. Existing distribution lines would similarly be removed and attached to the proposed 120 kV lines along all alternative routes. Double circuiting by definition in this report involves building two lines on to the same supporting structure.

Northern Alternative

Route Summary: The Northern Alternative would begin at the Tracy Power Plant and would run north along the existing Rocketdyne distribution line (through the Pah Rah Range), then west at Axe Handle Road to Pyramid Highway. A double-circuited 120 kV line with distribution underbuild would run south along Pyramid Highway to the Proposed Sugarloaf Substation. The route would then continue back north along Pyramid Highway to the intersection with Winnemucca Ranch Road, turn west to Antelope Valley Road, then south along Antelope Valley Road and Red Rock Road to the Proposed Reno-Stead Airport Substation. From here, the route would continue south along Red Rock Road, east along Osage Road, and south along Moya Boulevard through Stead, terminating at the existing Silver Lake Substation (Figure 2-11).

The Northern Alternative would generally run north of the proposed route, avoiding in large part the developed areas in Spanish Springs and in the cities of Reno and Sparks and the Reno Sparks Indian Colony. The route would be approximately 46 miles long with approximately 13 miles on public land and 33 miles on private land. The total area of the ROW over the length of the alternative would be approximately 142 acres, 38.3 acres of which would be on land administered by BLM. Eighty acres of the ROW is located along already disturbed existing transmission or distribution line routes. The Northern Alternative would follow the existing Rocketdyne line from the Tracy Power Plant to approximately the eastern end of Curnow Canyon Road. The transmission line would depart the Rocketdyne line and run northwest, incorporating a short section of existing distribution line between Curnow Canyon Road and Axe Handle Road. The transmission line would follow Axe Handle Road to the intersection with Pyramid Highway.

The transmission line would cross Pyramid Highway and continue south, following an existing distribution line. The route would cross to the east side of the highway and then back to the west side before continuing west to the Proposed Sugarloaf Substation. The existing distribution lines along the length of Pyramid Highway would be removed and would be transferred to the 120 kV poles. Under this alternative, the portion of the route along Pyramid Highway would be double-circuited, which consists

Table 2-4
Comparison of the Proposed Action and Alternatives

Routes	Length of ROW (miles)[1]	Length of ROW on Public Land (miles)[1]	Length of ROW on non-Public Land (miles)[1]	Length of Transmission Line Along Pyramid Highway (miles)[1]	Reliability Criteria Factor[11]	Potential Area of Temporary Disturbance (acres)[2]	Total Area of Long Term Disturbance (acres)[3]	Total Area of Existing Disturbed Lands (acres)[4]	Amount of Transmission Line Requiring Double Circuiting (miles)[1]	Approximate Transmission Line Cost(Millions)[6]	Estimated Easement Acquisition Cost[10]	Structures within 150 feet of the Transmission Line[12]	Structures within 150 feet of Phase 1 of the Transmission Line[13]	Structures within 150 feet of Phase 2 of the Transmission Line[14]	Number of Parcel Easements Required[8]	Acreage of Easement Land Required[9]
Proposed Action	34	12	22	3	100%	408	28	34	0	$ 9.4	$2.1	33	27	6	130	83
Northern Alternative	46	13	33	7	89%	494	23	60	5	$13.7	$3.2	51	1	50	199	104
Calle de la Plata Alternative	36	12	24	1	100%	457	36	30	0	$ 10.0	$2.2	44	0	44	145	84
Southern Alternative	35	11	24	5	75%	401	19	44	14	$12.2	$2.8	141	26	115	186	79
Foothills Alternative	38	16	22	3	82%	457	29	40	12	$12.7	$2.5	150	27	123	195	83
Existing Corridor Alternative	38	6	33	7	58%	434	6	63	26[5]	$20.1 [7]	$4.6	189	121	68	110	152

[1]Mileage has been rounded to nearest whole number.

[2]Temporary disturbance includes staging and stringing areas, overland travel routes (assumed 30' wide), substations, and pole placement. While the ROW for the public lands would be up to 40-feet, the area of actual temporary disturbance would average 30-feet.

[3]Long term disturbance would be associated with area of substations, poles and guy anchors and two-track road along the corridor (assumed 15' wide) where currently no disturbance exists.

[4]All alternatives use portions of existing transmission and distribution lines, which are assumed to contain established access roads and other infrastructure that can be used for operations and maintenance.

[5]Includes about 10 miles of 120/345 kV double circuit.

[6]Using independent cost data provided in Table 2-1 (ECI 2003). Assumes all routes and lengths would include a distribution line underbuild.

[7]Industry standard costs for 120/345 kV construction with an energize line ranges from $950,000 to $1.3 million per mile. For this analysis the cost is assumed to be $1 million per mile. The Existing Corridor Alternative would require about 10 miles of 120/345 kV construction.

[8]Number of parcels were determined assuming up to a 20-foot easement for existing lines, a 40-foot easement for new lines, and a 125-foot easement for new lines built under the existing corridor alternative (excluding BLM land).

[9]Acreages were calculated by multiplying the length of each route by easement parameters set forth in assumption 8 above. Acreages do not include land owned by the BLM.

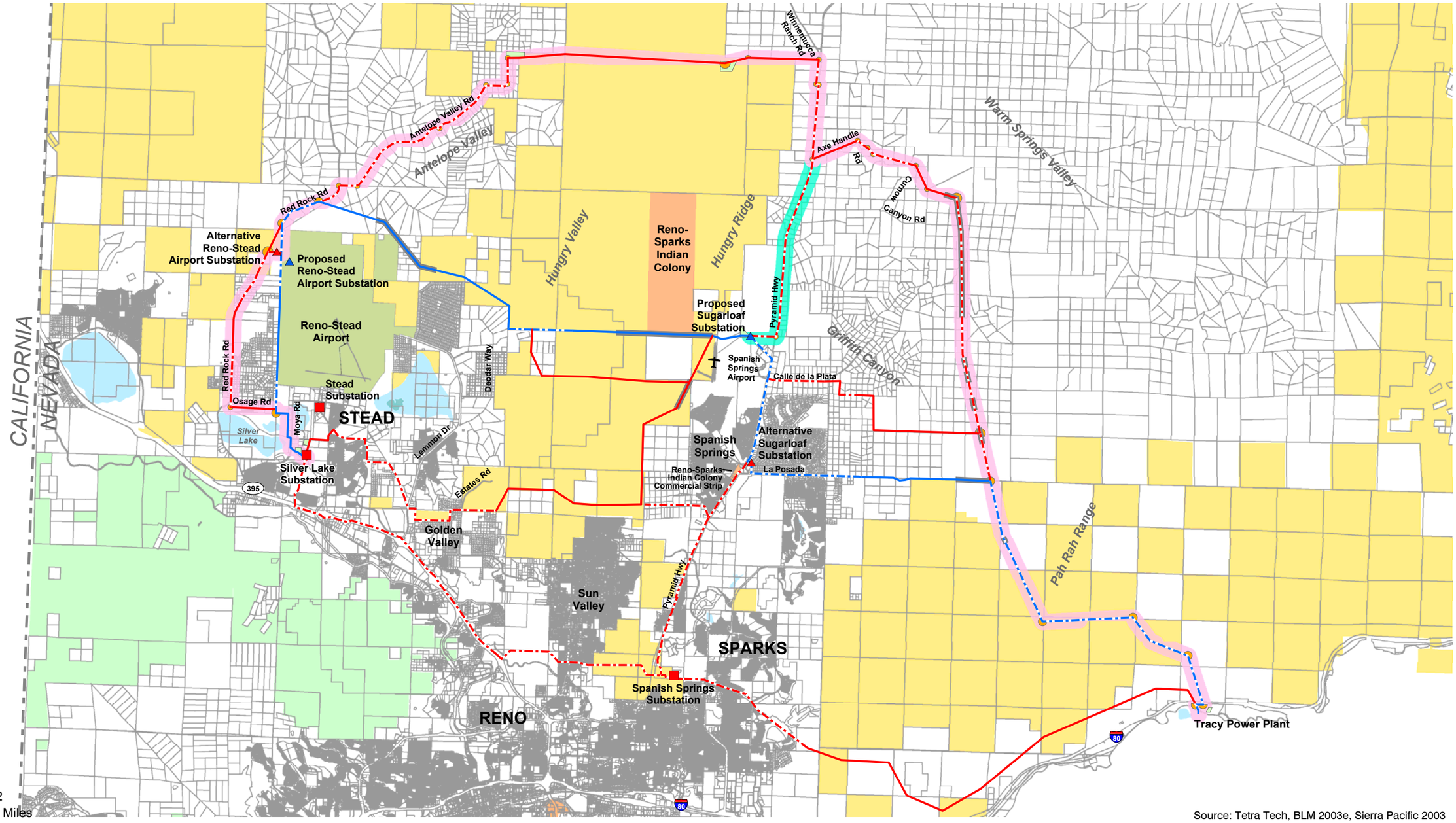
[10]SPPCo derived the costs in February 2004. Estimates were done on a per parcel basis in one of three ways: 1) by assuming a nominal value of $5,000 per parcel, 2) by estimating what an appraiser might value the easement at based on the actual size and location of the easement, and 3) by determining where adding easements next to existing easements might cause excessive damage to the buildability of a parcel.

[11]The Reliability Criteria Factor can be defined as the percentage of that portion of a route that is unencumbered by double circuit 120 kV lines feeding the same substation, either Sugarloaf, Silver Lake, Spanish Springs, or Stead Airport.

[12] Structures were counted based on best professional judgment using 2002 orthophotos of Washoe County (updated analysis from Draft EIS).

[13]Structures for Phase 1 were counted from the Tracy Power Plant to the Proposed Sugarloaf Substation on all routes except the Southern and Existing Corridor Alternatives. To prevent double counting, structures from Tracy Power Plant to Pyramid Highway were included in Phase 1 of the Southern Alternative. Structures from the Tracy Power Plant to and along Pyramid Highway were included in the Phase 1 count under the Existing Corridor Alternative.

[14]Structures for Phase 2 were counted from the Proposed Sugarloaf Substation to the Silver Lake Substation on all routes except the Southern and Existing Corridor Alternatives. To prevent double counting, structures on Pyramid Highway and west were included in Phase 2 of the Southern Alternative. Structures west of Pyramid Highway were included in the Phase 2 count under the Existing Corridor Alternative.



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Source: Tetra Tech, BLM 2003e, Sierra Pacific 2003

The Northern Alternative route would be approximately 46 miles long with approximately 13 miles on public land and 33 miles on private land.

Legend

Proposed Routes

- Proposed Route
- Proposed Route (incorporating existing line)
- Alternative Route
- Alternative Route (incorporating existing line)
- 120 kV Single Circuit Transmission Line
- 120 kV Double Circuit Transmission Line

Other Features

- Existing Substation
- Proposed Substation
- Alternative Substation
- Stringing Areas
- Staging Areas
- 600ft Study Area

Land Status

- Bureau of Land Management
- Native American Reservation
- Private
- County/City Parks
- US Forest Service
- Airport Authority of Washoe County
- Water

Tetra Tech, Inc

Northern Alternative

Tracy to Silver Lake 120 kV Transmission Line

Washoe County, Nevada

Figure 2-11

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of similar support poles but two sets of transmission lines, one each side of the support poles (Figure 2-12). Double-circuiting would be necessary because one set of lines would be required to bring power south to the Proposed Sugarloaf Substation, while a second set of lines would be required to complete the circuit and enable the route to continue to the Stead area.

The line would continue north from Axe Handle Road, following an existing distribution line, along the east side of Pyramid Highway, crossing to the west side of the highway south of Winnemucca Ranch Road. At the intersection of Pyramid Highway and Winnemucca Ranch Road the line would turn west and run across mostly public land to Antelope Valley Road. Here the line would run south, following existing distribution lines, along Antelope Valley Road, Red Rock Road, and the northwestern edge of the Reno-Stead Airport property until it reaches the Proposed Reno-Stead Airport Substation on property owned by the Airport Authority of Washoe County.

From the Proposed Reno-Stead Airport Substation, the transmission line would continue west to Red Rock Road and south along Red Rock Road to Osage Road, incorporating two short sections of existing distribution line, and finally east to Moya Boulevard. The Northern Alternative would then follow the same route as the Proposed Action along Moya Boulevard to the existing Silver Lake Substation.

Staging areas for the Northern Alternative would be in the following locations:

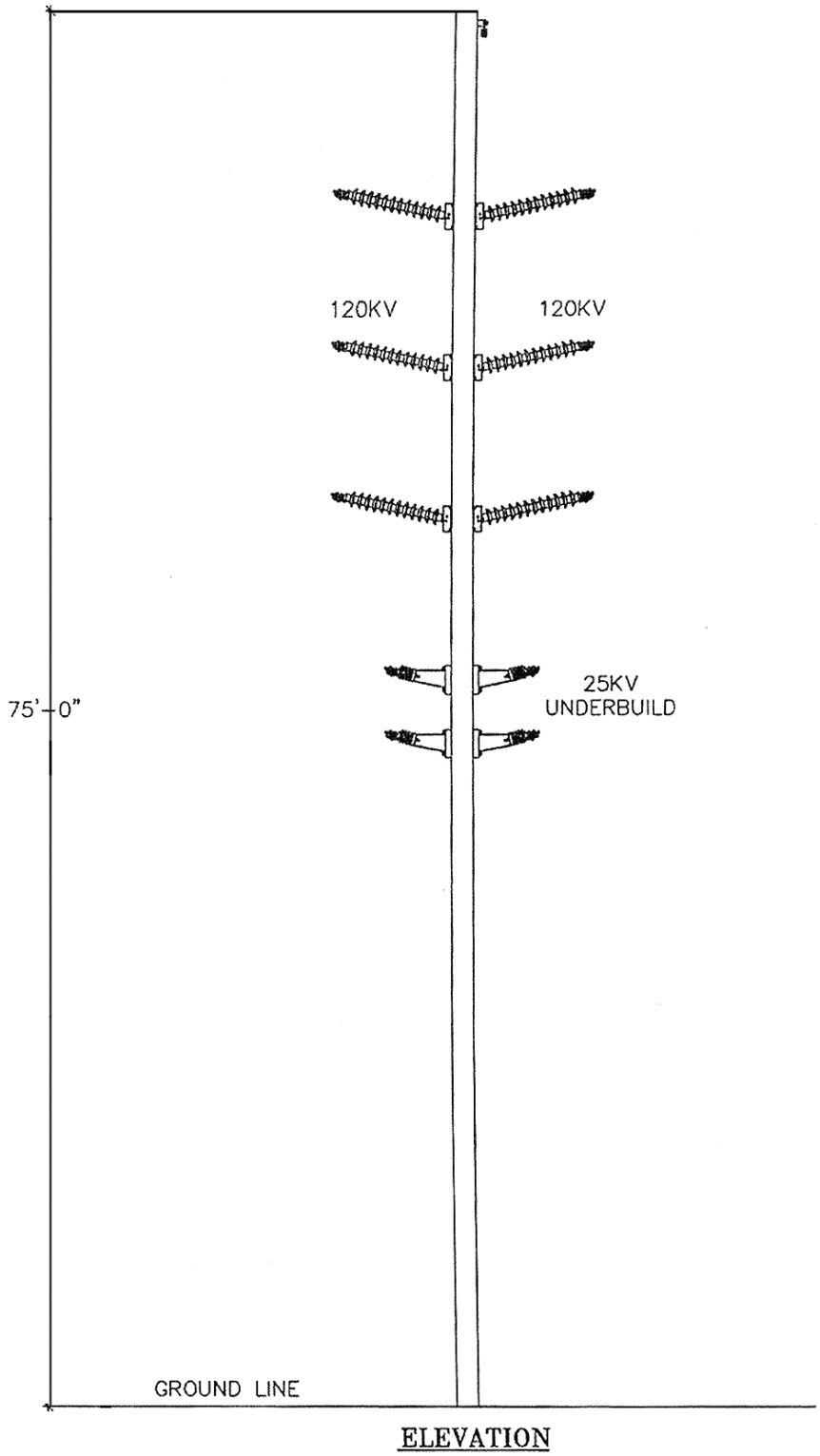
- Northeast of the Tracy Power Plant;
- At the Proposed Sugarloaf Substation site;
- One location in northern Hungry Valley, near the proposed alignment;
- One location in Antelope Valley, near the proposed alignment; and
- In two locations north of the existing Silver Lake Substation.

Calle de la Plata Alternative

Route Summary: The Calle de la Plata Alternative would begin at the Tracy Power Plant and would run north through the Pah Rah Range along the Rocketdyne Line to Calle de la Plata, west to Pyramid Highway, then north along Pyramid Highway to the Proposed Sugarloaf Substation. The route would continue west, along the Proposed Action route, to just east of the southeast corner of the Reno-Sparks Indian Colony, where it would turn southwest west of the Spanish Springs Airport, turning west over the hills and continuing west along the southern edge of Hungry Valley. The route would then turn northerly to the Proposed Route east of Deodar Way. The Calle de la Plata Alternative would continue west along the same alignment as the Proposed Route to Red Rock Road. The route would follow east on public land to the Alternative Reno-Stead Airport Substation, then back to Red Rock Road, following the Red Rock Road alignment to the existing Silver Lake Substation. This description incorporates revisions to three segments of the route in response to cooperating agency and public comments on the Draft EIS (Figure 2-13).

The Calle de la Plata Alternative is approximately 36 miles long, with approximately 12 miles on public land and 24 miles on private land. The total area of the ROW over the length of the alternative would be approximately 145 acres, 48 acres of which would be on public land. Thirty-eight acres of the ROW is located along already disturbed existing transmission or distribution line routes.

Three portions of the Calle de la Plata route have been revised in response to comments from the public and cooperating agencies on the Draft EIS. Specifically, about two miles of the line have been moved south in the Griffith Canyon area to minimize impacts on cultural resources, about three miles have been relocated south of the RISC to minimize visual impacts in Hungry Valley and to comply with the Reno-Sparks Indian Colony Comprehensive Plan, and about four miles have been relocated west of the Reno-Stead Airport to prevent impacts on the Reno National Championship Air Races. These changes are shown on Figure 2-13.



Source: Sierra Pacific 2003

R:\new\12495\120 KV Double Circuit.cdr - 05/06/04 - CT

The portion of the Northern Alternative route along Pyramid Highway would be double-circuited, which consists of similar support poles but two sets of transmission lines, one each side of the support poles.

Typical Single Pole 120 kV With Double Circuit Configuration

Washoe County, Nevada

Figure 2-12

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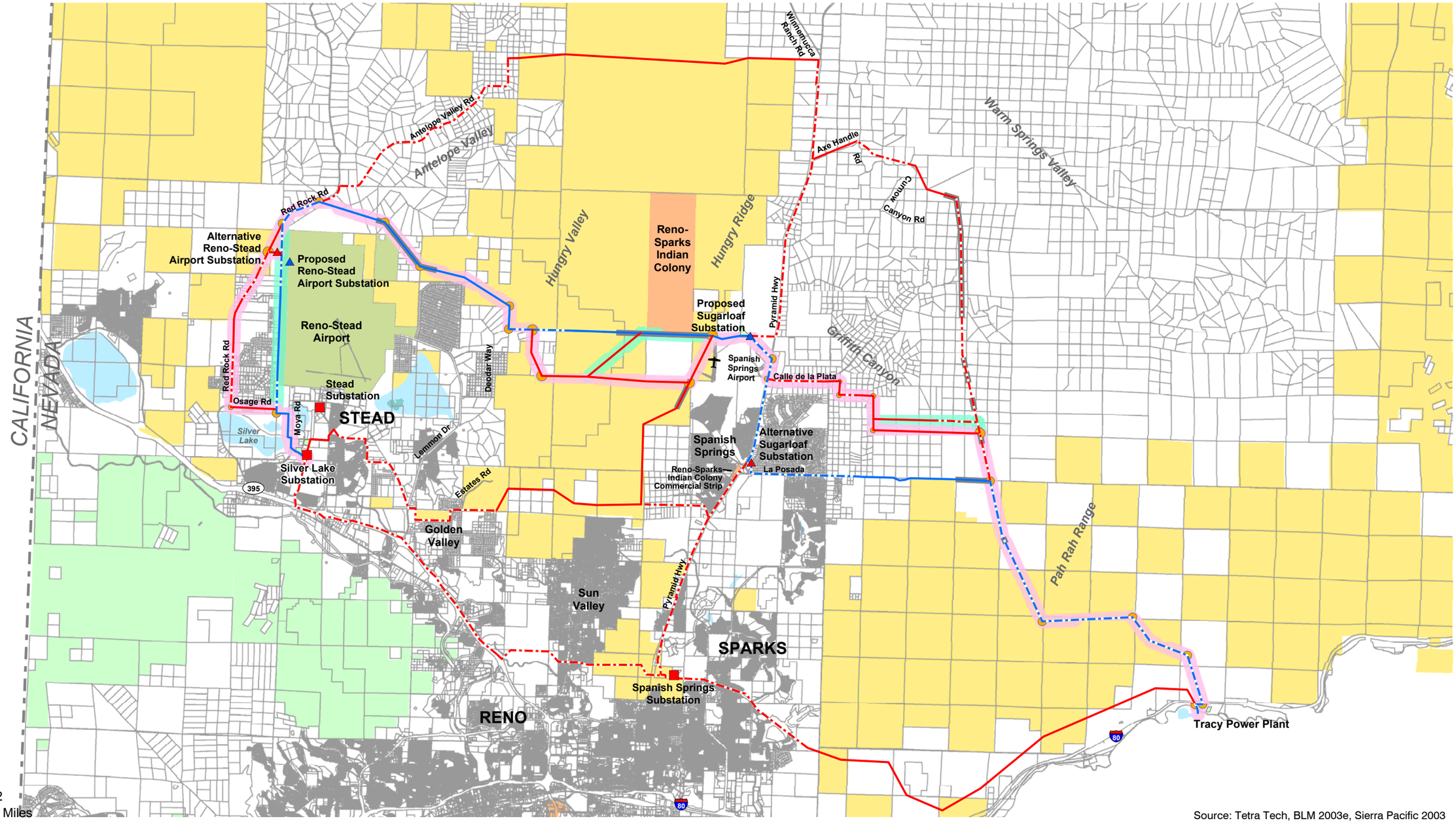

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Source: Tetra Tech, BLM 2003e, Sierra Pacific 2003

The Calle de la Plata Alternative is approximately 36 miles long, with approximately 12 miles on public land, 24 miles on private land.

Legend

Routes
- Proposed Route
- Proposed Route (incorporating existing line)
- Alternative Route
- Alternative Route (incorporating existing line)
- 120 kV Single Circuit Transmission Line
- Calle de la Plata Segments No Longer Considered

Other Features
- Existing Substation
- Proposed Substation
- Alternative Substation
- Stringing Areas
- Staging Areas
- 600ft Study Area

Land Status
- Bureau of Land Management
- Native American Reservation
- Private
- County/City Parks
- US Forest Service
- Airport Authority of Washoe County
- Water

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Calle de la Plata Alternative

Tracy to Silver Lake 120 kV Transmission Line

Washoe County, Nevada

Figure 2-13

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Similar to the Proposed Action route, the Calle de la Plata Alternative would follow the existing Rocketdyne distribution line from the Tracy Power Plant; however, under this alternative, the line would continue farther north along the Rocketdyne line to approximately Griffith Canyon. The route would turn west near Griffith Canyon and continue, alternately running west and north, following private property lines and incorporating one small stretch of existing distribution line, until it reaches Calle de la Plata. The line would continue west along the south side of Calle de la Plata, incorporating the existing distribution lines, to Pyramid Highway. The transmission line would continue north on Pyramid Highway, along the Proposed Action route, to the Proposed Sugarloaf Substation.

From the Proposed Sugarloaf Substation, the Calle de la Plata Alternative would continue west, along the Proposed Action route, for approximately 0.8 mile, where it would turn south-southwest for approximately 1.1 miles, west over the hills and through Hungry Valley for approximately 3.2 miles, and north by northwest 1.1 miles, until returning to the proposed route east of Deodar Way. The Calle de la Plata Alternative would follow the same route as the Proposed Action to Red Rock Road. The route would follow east on BLM land to the Alternative Reno-Stead Airport Substation. The route would double back west to Red Rock Road. From here, the route would continue south along Red Rock Road, east along Osage Road, and south along Moya Boulevard through Stead, terminating at the existing Silver Lake Substation. Staging areas for the Calle de la Plata Alternative would be in the following locations:

- Northeast of the Tracy Power Plant;
- At the Proposed Sugarloaf Substation site;
- In one location in southern Hungry Valley adjacent to the existing distribution line, and
- In two locations north of the existing Silver Lake Substation.

Southern Alternative

Route Summary: The Southern Alternative would follow the same route as the Proposed Action north along the Rocketdyne line through the Pah Rah Range and west along La Posada to Pyramid Highway. A double-circuited line would continue north along Pyramid Highway to the Proposed Sugarloaf Substation. To reach Stead, the Southern Alternative would continue south from La Posada, along Pyramid Highway to approximately Erin Court, where the line would turn west and run north of Sun Valley and Golden Valley. The route would follow a section of 60 kV transmission line designated as a Regional Utility Corridor through Golden Valley and Lemmon Valley. The route would run northwest along Military Boulevard, east along Sky Vista Parkway, along the southern edge of Mayors Park, and west to the existing Silver Lake Substation. From the existing Silver Lake Substation, a double-circuited line would extend north along the route of the Proposed Action, along the airport boundary, to the Proposed Reno-Stead Airport Substation (Figure 2-14).

The Southern Alternative would generally run south of the Proposed Action, through more developed areas in Golden Valley and Lemmon Valley. The route would be approximately 35 miles long, with approximately 11 miles on public land, 21 miles on private land, and 3 miles on property owned by the Airport Authority of Washoe County. The total area of the ROW over the length of the alternative would be approximately 110 acres, 21.42 acres of which would be on land administered by BLM. Fifty-nine acres of the ROW is located along already disturbed existing transmission or distribution line routes. The Southern Alternative would follow the same route as the Proposed Action from the Tracy Power Plant, along the Rocketdyne line, La Posada, and north along the east side of Pyramid Highway, to the Proposed Sugarloaf Substation. The transmission line along Pyramid Highway to the Proposed Sugarloaf Substation would be double-circuited as described for the Northern Alternative.

To continue the transmission line to the Stead area, a single-circuited transmission line would continue south on Pyramid Highway from La Posada. The transmission line would continue along the east side

of Pyramid Highway, along an existing distribution line, to approximately Erin Court, where it would turn west and follow existing distribution lines across private property and on public land at the edge of Hungry Ridge.

The line would run north of Sun Valley and along an existing distribution alignment north of Golden Valley. At Estates Road, the route would follow a section of 60 kV transmission line designated as a Regional Utility Corridor. The line would continue along this corridor northwest along Military Boulevard, east along Sky Vista Parkway, along the southern edge of Mayors Park. At this point, the line would depart the designated utility corridor and would run southwest to the existing Silver Lake Substation. In order to supply electricity to the Proposed Reno-Stead Airport Substation, a double-circuited transmission line would extend north along Moya Boulevard and along the western edge of the Reno-Stead Airport (the same route as the Proposed Action route) to the Proposed Reno-Stead Airport Substation.

Staging areas for the Southern Alternative would be in the following locations:

- Northeast of the Tracy Power Plant;
- At the Proposed Sugarloaf Substation site;
- In Golden Valley near the line off Estates Road; and
- In two locations north of the existing Silver Lake Substation.

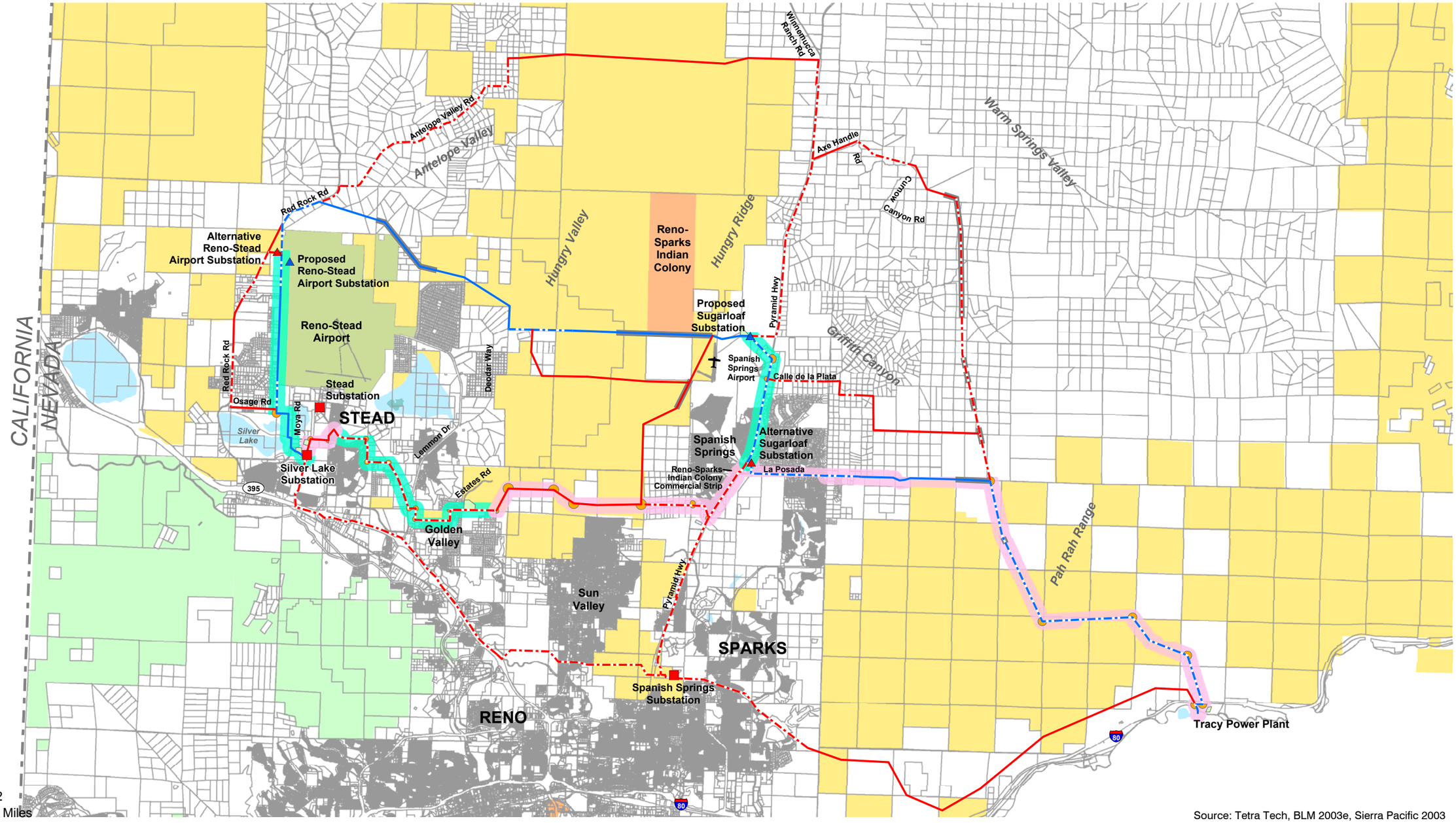
Foothills Alternative

Route Summary: The Foothills Alternative would follow the same route as the Proposed Action north along the Rocketdyne line through the Pah Rah Range, west along La Posada to Pyramid Highway, and north along Pyramid Highway to the Proposed Sugarloaf Substation. The route would continue west, along the Proposed Action route, for approximately 0.84 miles where it would turn south and follow along the foothills west of Spanish Springs. The Foothills Alternative route would intersect the Southern Alternative route north of Sun Valley and would continue along the same route to the existing Silver Lake Substation. To reach the Proposed Reno-Stead Airport Substation, a double-circuited line would extend north along Moya Boulevard, to Osage Road, where it would turn west, following a portion of the Northern Alternative route, along Osage Road to Red Rock Road and north along Red Rock Road to the Proposed Reno-Stead Airport Substation (Figure 2-15).

The Foothills Alternative would be similar to the Southern Alternative but, rather than placing a double-circuited line along Pyramid Highway, would place the Stead continuation along the foothills west of Spanish Springs. The route would be approximately 38 miles long, with approximately 16 miles on public land, 22 miles on private land, and 3 miles on property owned by the Airport Authority of Washoe County. The total area of the ROW over the length of the alternative would be approximately 184 acres, 79 acres of which would be on land administered by BLM. Forty acres of the ROW is located along already disturbed existing transmission or distribution line routes.

The Foothills Alternative would follow the same route as the Proposed Action from the Tracy Power Plant, along the Rocketdyne line, La Posada, and Pyramid Highway, to the Proposed Sugarloaf Substation. From the Sugarloaf Substation, the transmission line would continue west for approximately one mile, along the Proposed Action route, and on to public land. The route would then turn southwest and follow the foothills of Hungry Ridge until it intersects with the Southern Alternative route north of Sun Valley. Most of the route west of Spanish Springs would be on public land.

The Foothills Alternative would follow the same alignment as the Southern Alternative to the existing Silver Lake Substation. From the Silver Lake Substation to the Proposed Reno-Stead Airport Substation, a double-circuited transmission line would extend north along Moya Boulevard, west along Osage Road, and north on Red Rock Road to the Proposed Reno-Stead Airport Substation.



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The Southern Alternative route would be approximately 35 miles long, with approximately 11 miles on public land, 21 miles on private land, and 3 miles on property owned by the Airport Authority of Washoe County.

Legend

Routes
- Proposed Route
- Proposed Route (incorporating existing line)
- Alternative Route
- Alternative Route (incorporating existing line)
- 120 kV Single Circuit Transmission Line
- 120 kV Double Circuit Transmission Line

Other Features
- Existing Substation
- Proposed Substation
- Alternative Substation
- Stringing Areas
- Staging Areas
- 600ft Study Area

Land Status
- Bureau of Land Management
- Native American Reservation
- Private
- County/City Parks
- US Forest Service
- Airport Authority of Washoe County
- Water

Tetra Tech, Inc

Southern Alternative
Tracy to Silver Lake 120 kV Transmission Line

Washoe County, Nevada

Figure 2-14

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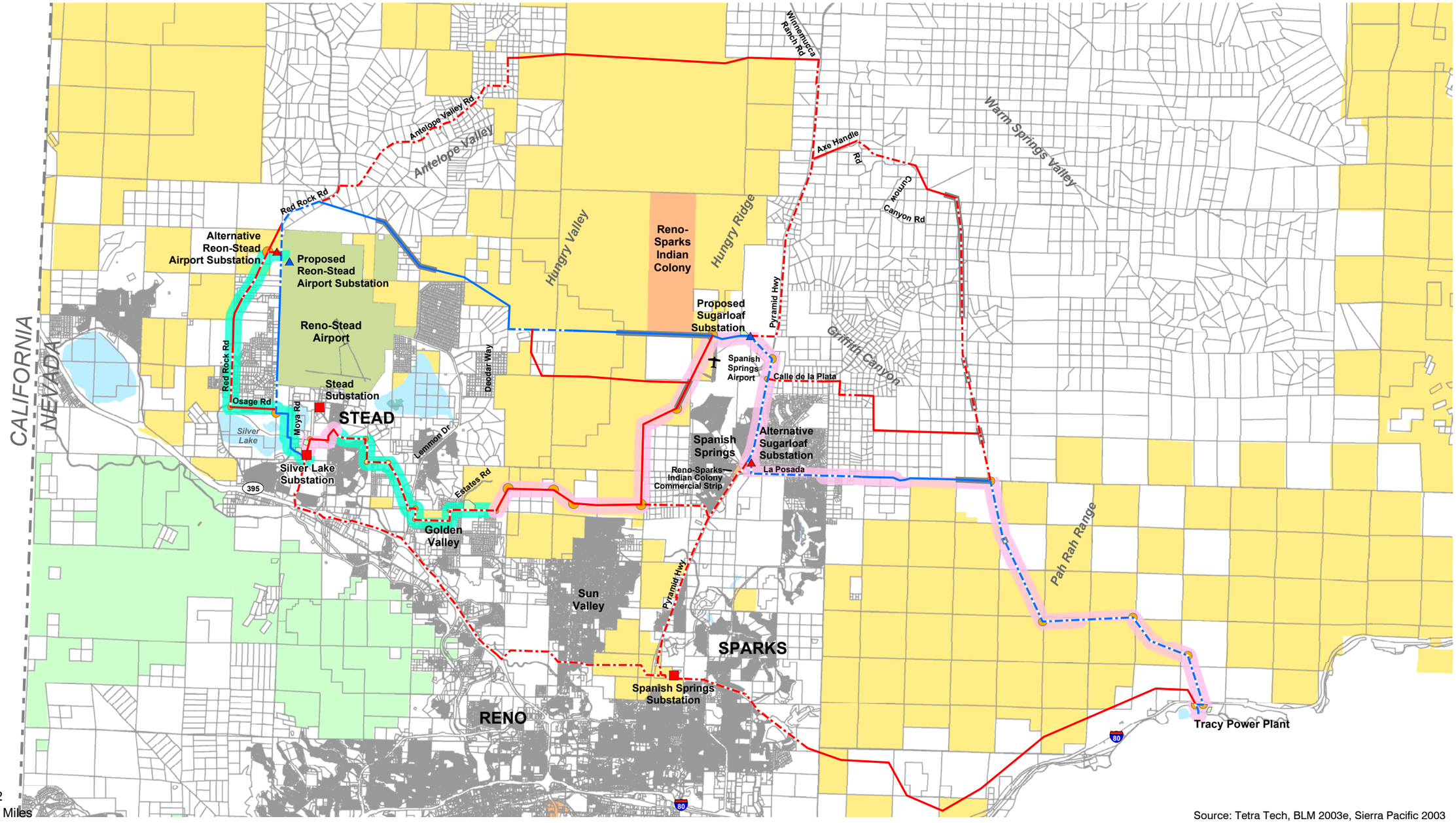

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Source: Tetra Tech, BLM 2003e, Sierra Pacific 2003

The Foothills Alternative route would be approximately 38 miles long, with approximately 16 miles on public land, 22 miles on private land, and 3 miles on property owned by the Airport Authority of Washoe County.

Legend

Routes

- Proposed Route
- Proposed Route (incorporating existing line)
- Alternative Route
- Alternative Route (incorporating existing line)
- 120 kV Single Circuit Transmission Line
- 120 kV Double Circuit Transmission Line

Other Features

- Existing Substation
- Proposed Substation
- Alternative Substation
- Stringing Areas
- Staging Areas
- 600ft Study Area

Land Status

- Bureau of Land Management
- Native American Reservation
- Private
- County/City Parks
- US Forest Service
- Airport Authority of Washoe County
- Water

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Foothills Alternative

Tracy to Silver Lake 120 kV Transmission Line

Washoe County, Nevada

Figure 2-15

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Staging areas for the Foothills Alternative would be in the following locations:

- Northeast of the Tracy Power Plant;
- At the Proposed Sugarloaf Substation site;
- In Golden Valley near the line off Estates Drive; and
- In two locations north of the existing Silver Lake Substation.

Existing Corridor Alternative

Route Summary: This alternative would use existing routes to the maximum extent possible, including between the Tracy Power Plant and the existing Silver Lake Substation, and between the existing Spanish Springs Substation and the Proposed Sugarloaf Substation via the Pyramid Highway. A new double-circuited line route would be established to connect Silver Lake with the Proposed Reno-Stead Airport Substation via the Proposed Action route of Moya Boulevard and Osage Road, and along the western boundary of the Reno-Stead Airport (Figure 2-16).

The Existing Corridor Alternative would use about 35 miles of existing corridors. In total, the route would be approximately 38 miles long, with approximately 6 miles on public land, 30 miles on private land, and 3 miles on property owned by the Airport Authority of Washoe County. The total area of the ROW over the length of the alternative would be approximately 184 acres, 24 acres of which would be on public land. Sixty-three acres of the ROW is located along already disturbed existing transmission or distribution line routes. Implementing this alternative would require both the construction of parallel lines where there is enough space within the existing corridors or constructing double circuits. The Existing Corridor Alternative from Tracy to the existing Spanish Springs Substation area involves several configurations of line construction combinations. For the first 14 miles, a new 120 kV transmission line would be built parallel to the existing Tracy to Spanish Springs Substation 120 kV line at a separation of 100 feet.

As the line enters the developed area of Sparks near the proposed Copper Canyon and existing D'Andrea housing developments, it would be necessary to double circuit the proposed 120 kV line with the existing 120 kV line for 1.8 miles. This is due to conflicts with the existing golf course and residential units that would need to be purchased if the line was to continue in parallel fashion. For the remaining 1.7 miles from Vista Boulevard into the Spanish Springs Substation, the new 120 kV line would need to jump over to the existing 25 kV line alignment just 50 feet to the south. This configuration would be a 120 kV line with 25 kV underbuild. This is due to lack of space on the existing 120/345 kV double circuit configuration structures that run from Vista Boulevard to the existing Spanish Springs Substation.

Connecting to the Proposed Sugarloaf Substation from Spanish Springs would consist of a double circuit 120 kV line built incorporating the existing 25 kV line and alignment along the Pyramid Highway. One 120 kV circuit would be Tracy to Sugarloaf with the other consisting of Sugarloaf to Silver Lake. The length of this segment would be 9.1 miles.

A double circuit 120/345 kV line would be constructed within the existing corridor between the Spanish Springs Substation and the Silver Lake Substation (Figure 2-17). In order to maintain service, construction would involve energized lines via the Tracy-Valley Road and Alturas 345 kV transmission line. Adding a 120kV circuit to the existing Alturas 345 kV line that runs along Highway 395 is complicated by space constraints of the highway on one side and close proximity to development on the other side of the line. The Alturas line provides bulk power supply to SPPCo's electrical system. Because of this, the Alturas line is very difficult to take out of service and must remain energized most of the time to supply system demand. Outages on this line need to be taken during off-peak power flow times and when no other major system maintenance is occurring. These constraints make the outages difficult to schedule over a few days or weeks at a time during the year (Wehrkamp 2003a).

To add the new 120 kV circuit, much of the Alturas line would need to be rebuilt. Any highway ROW encroachments would need Nevada Department of Transportation (NDOT) approval. Under constraints of highway traffic and keeping the line energized, as much preparatory work as possible would take place. This could include material deliveries, tower assembly, erecting small shoo-flies[1] where needed, foundation work, and wire stringing site setups. All activities would take place in anticipation of the amount of work that could be accomplished during a given outage duration (Wehrkamp 2003a).

During an outage, sections of the Alturas line would be rebuilt. This would include removing old towers, erecting new ones, stringing or transferring wire, and preparing each section of line to be reenergized. From one to several towers and associated wire activities would be involved, depending on the length of the outage. Planning and organization is critical during each outage to ensure the Alturas line and its power delivery capability is back on as scheduled (Wehrkamp 2003a).

Segmented construction during each outage would be repeated until the entire line is completed. Because of the scarce outage availability and small sections of line involved each time, this construction process would be very inefficient and would take much longer than the Proposed Action and alternatives (Wehrkamp 2003a).

From the existing Silver Lake Substation to the Proposed Reno-Stead Airport Substation, a double-circuited transmission line would extend north along Moya Boulevard, west to Osage Road, and would continue north along the western edge of the airport property to the Proposed Reno-Stead Airport Substation.

Staging areas for the Existing Corridor Alternative would be in the following locations:

- Northeast of the Tracy Power Plant;
- At the existing Spanish Springs Substation site;
- At the Proposed Sugarloaf Substation site; and
- In two locations north of the existing Silver Lake Substation.

All five proposed transmission line routes would incorporate varying lengths of existing transmission or distribution lines. Figure 2-18 displays the locations of the existing distribution and transmission lines.

No Action Alternative

Under the No Action Alternative the project would not be implemented. SPPCo would continue to rely on the existing infrastructure to serve the Spanish Springs and Stead areas. The No Action Alternative would not meet the stated purpose and need; however, it is carried forward for detailed analysis in accordance with CEQ guidance in order to provide a benchmark against which impacts from the action alternatives can be evaluated (40 C.F.R. 1502.11[d]).

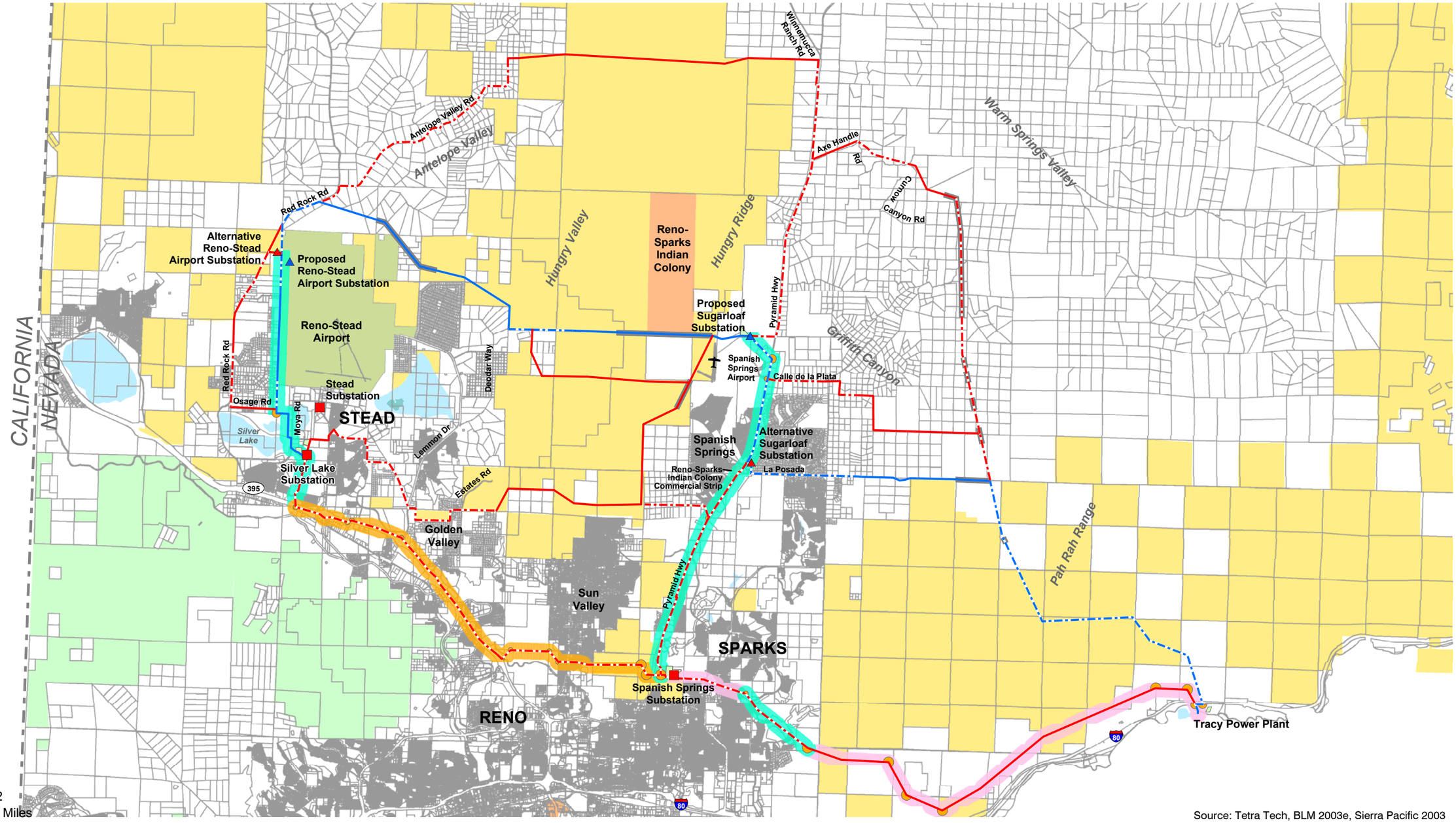
ALTERNATIVE SUBSTATION LOCATIONS

Alternative locations for each of the proposed substations have been identified. The Alternative Sugarloaf Substation is at the western end of Virgil Drive, between Rockwell Boulevard and Pyramid Highway, immediately north of the existing Spanish Springs Shopping Center (Figure 2-19). The Alternative Stead-Airport Substation is immediately northwest of the Proposed Reno-Stead Airport Substation (Figure 2-20). Construction, operation, and restoration activities for the alternative substations would be the same as that described above for the proposed substations.

PREFERRED ALTERNATIVE

The Preferred Alternative is the revised Calle de la Plata Alternative, using the Proposed Sugarloaf Substation, the Alternative Reno-Stead Airport Substation, and the Silver Lake Substation. The Preferred Alternative was identified by the BLM in coordination with the Cooperating Agencies.

[1] A shoo-fly is a construction term meaning to build another temporary piece of line to divert power flow so as to get the existing line out of service.



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The Existing Corridor Alternative would use about 35 miles of existing corridors. In total, the route would be approximately 38 miles long, with approximately 6 miles on public land, 30 miles on private land, and 3 miles on property owned by the Airport Authority of Washoe County.

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Legend

Routes

- Proposed Route
- Proposed Route (incorporating existing line)
- Alternative Route
- Alternative Route (incorporating existing line)
- 120 kV Single Circuit Transmission Line
- 120 kV Double Circuit Transmission Line
- 345/120 kV Double Circuit Transmission Line

Other Features

- Existing Substation
- Proposed Substation
- Alternative Substation
- Stringing Areas
- Staging Areas
- 600ft Study Area

Land Status

- Bureau of Land Management
- Native American Reservation
- Private
- County/City Parks
- US Forest Service
- Airport Authority of Washoe County
- Water

Source: Tetra Tech, BLM 2003e, Sierra Pacific 2003

Existing Corridor Alternative Route

Tracy to Silver Lake 120 kV Transmission Line

Washoe County, Nevada

Figure 2-16

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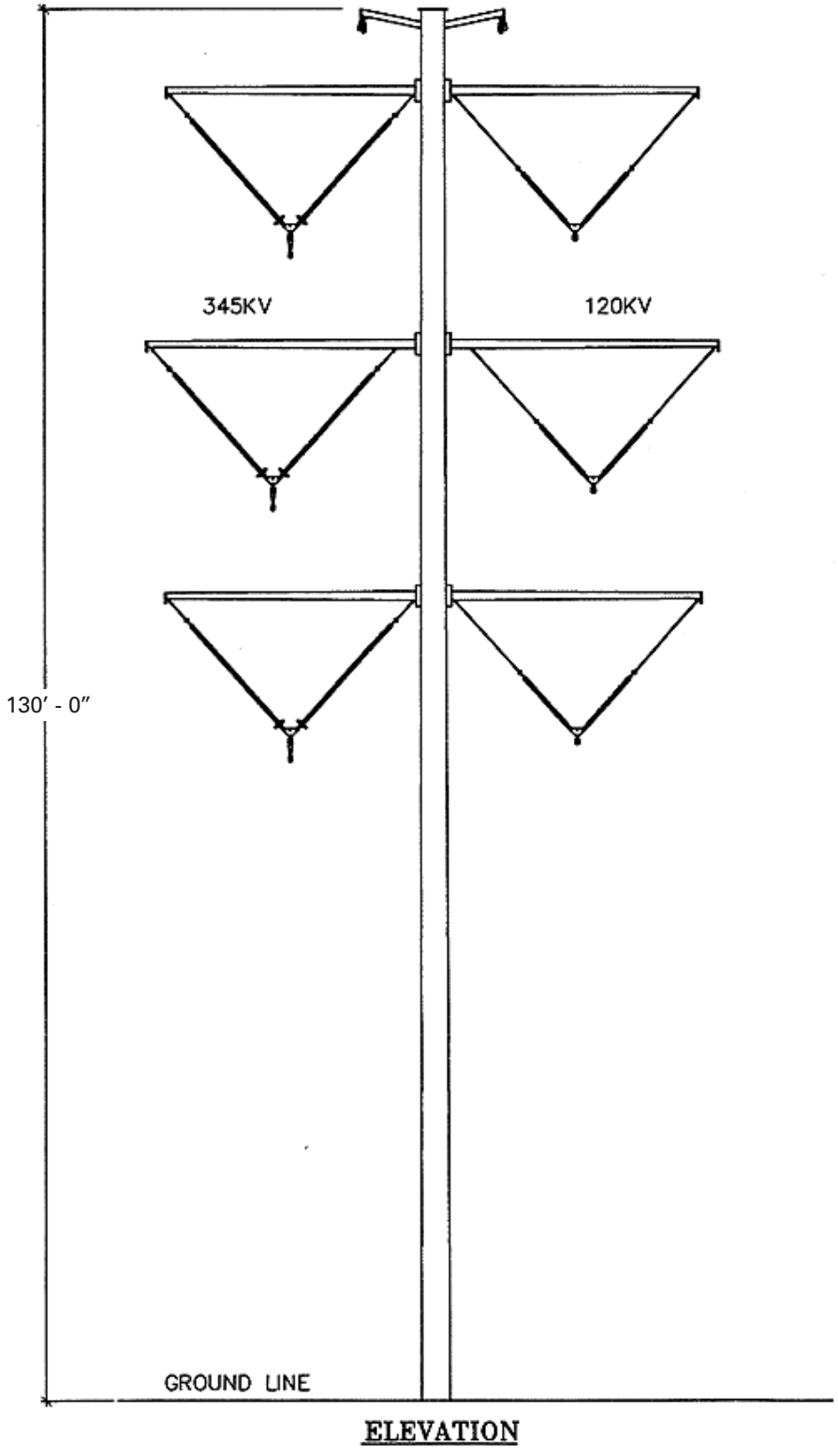

Source: Sierra Pacific 2003

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A double circuit 120/345 kV line would be constructed within the existing corridor between the Spanish Springs Substation and the Silver Lake Substation.

Typical 345/120 kV Double Circuit

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Washoe County, Nevada

Figure 2-17

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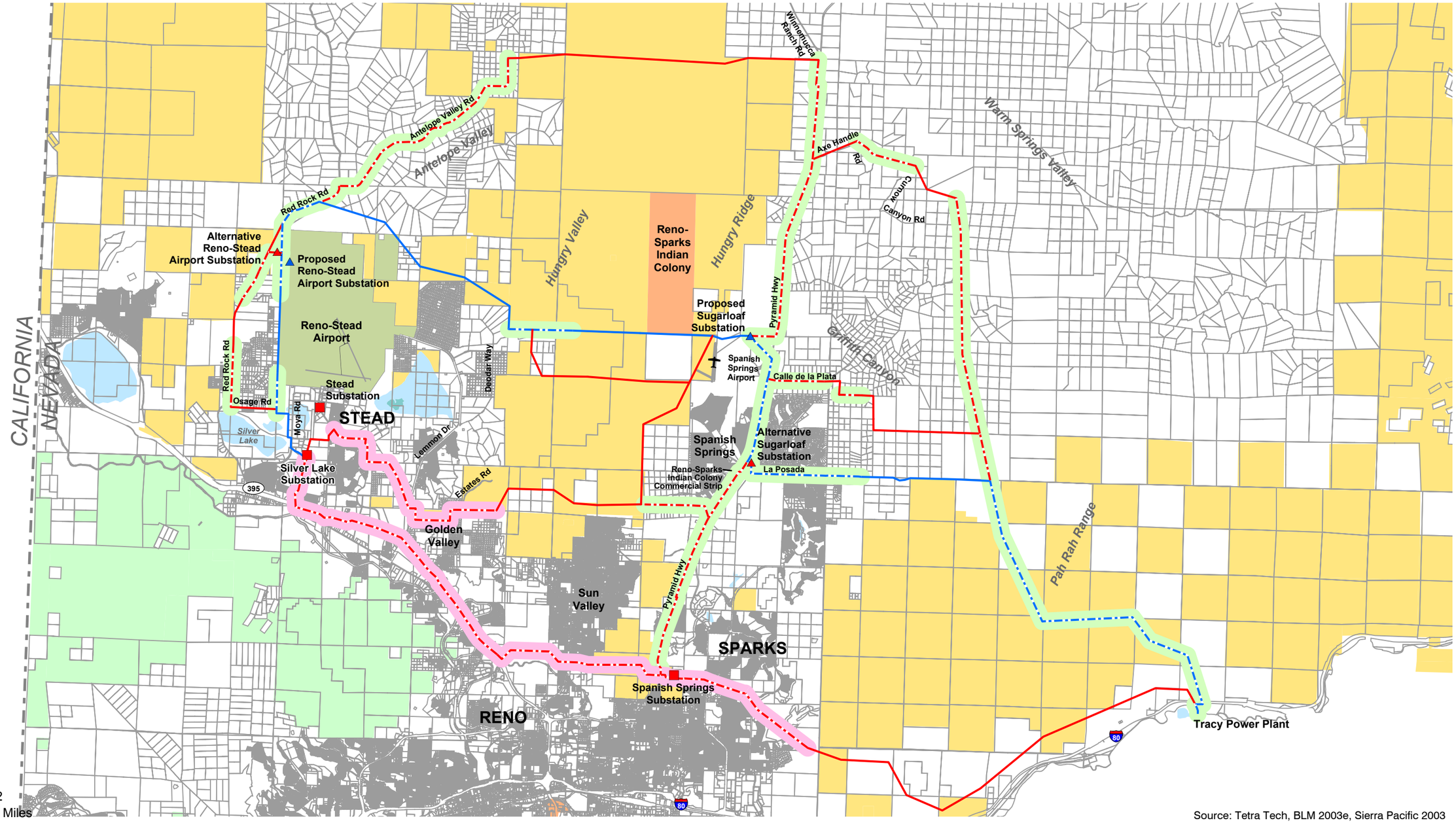

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Legend

Routes
- Proposed Route
- Proposed Route (incorporating existing line)
- Alternative Route
- Alternative Route (incorporating existing line)

Existing Line Types
- Transmission
- Distribution

Other Features
- Existing Substation
- Proposed Substation
- Alternative Substation

Land Status
- Bureau of Land Management
- Native American Reservation
- Private
- County/City Parks
- US Forest Service
- Airport Authority of Washoe County
- Water

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Distribution vs. Transmission Lines
Tracy to Silver Lake 120 kV Transmission Line

Washoe County, Nevada

Figure 2-18

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Figure 2-19: Southeastward view of the Proposed Sugarloaf Alternative Substation Location (to be located in the foreground).

Figure 2-20: Northward view of the Proposed Reno-Stead Airport Alternative Substation Location (to be located in the foreground).

ALTERNATIVES CONSIDERED BUT ELIMINATED

Upgrade Existing Facilities

Upgrading existing facilities was eliminated from consideration because it did not meet the purpose and need of the Proposed Action (ECI 2002); to improve system reliability requires that secondary electricity supply be provided to the Spanish Springs and Stead areas to ensure that contingency events do not interrupt service. Upgrading the existing lines does not address this reliability concern.

Tuscarora Gas Line

During the scoping period, members of the public suggested using the Tuscarora gas line corridor for the transmission line. This alternative would follow the Tuscarora gas line from Tracy into the east portion of the Spanish Springs Valley, with the substation being constructed on public land approximately one mile east of Wingfield Springs. This alignment was eliminated from consideration because the substation would be too far away from the load center (exceeds three miles) and because it extends through the Pah Rah High Basin Petroglyph District Area of Critical Environmental Concern (ACEC).

Encanto Court/Calle de la Plata

This alignment was eliminated from consideration because the Encanto and Calle de la Plata alignments are winding and would be inefficient for a transmission line. Steel angle poles or wood poles supported by guy wires would be required for virtually every pole along this segment in order to counter the changes in wire tension associated with changes in the roadway. The public also suggested underground construction along this alignment during scoping.

Route Segment South from Proposed Route, through Pah Rah Range

Members of the public suggested an alternate route extending south from the proposed route, east of La Posada, through the Pah Rah Range, and to the designated regional utility corridor north of I-80. This route was eliminated from consideration because it would extend through a BLM ACEC, as discussed previously for the Tuscarora gas line. An alignment through this area would result in greater impacts than the Proposed Action.

Route Segment West from La Posada to Silver Lake Substation

Members of the public suggested a route extending due east from La Posada, north of Sun Valley, and through Golden Valley and Lemmon Valley to the existing Silver Lake Substation. Although the exact route, as suggested by the public, was impractical due to areas of development and topography in the alignment that preclude construction, a variation on this route is included in the EIS in the Southern and Foothills alternatives.

Bordertown Substation to the Silver Lake Substation

During scoping it was suggested that power be brought out of the Bordertown Substation to meet capacity needs in the Stead area. The Bordertown Substation is about 15 miles northwest of Reno and is part of the Alturas 345 kV transmission line system. Bringing power out of the Bordertown Substation was also identified in the analysis of the Alturas 345 kV Transmission Line Project. The Alturas FEIR stated the following:

"As growth in the Stead area occurs, expansion of additional transmission facilities to the area would be required. Currently, Stead is served by an existing 60 kV transmission system that is capable of reliably serving approximately 43 MW of load. In 1994, the peak demand was 26.5 MW. Depending on the rate of growth, a 120 kV transmission addition could be required within the next 5 to 10 years (SPPCo, 1995c).

"In its long range planning studies, SPPCo has identified two options for servicing future Stead growth: 1) a 120 kV source into Silver Lake Substation from Tracy and 2) a 120 kV source into Silver Lake Substation from Border Town. If the Alturas Transmission Line Project were approved as proposed, and growth in the North Valleys

warranted a 120 kV transmission addition, then SPPCo would consider the addition of a 345/120 kV transformer at the Border Town Substation and a 120 kV transmission feed to the Silver Lake Substation. At the time such plans are developed, new applications would be required by responsible agencies. Future applications would be subject to a separate environmental review."

As stated in the preceding paragraphs, bringing a 120 kV feed out of Border Town to the Silver Lake Substation was one of two options that were identified to address future growth in Stead. The other option was to bring a 120 kV feed from Tracy to the Silver Lake Substation. The second option was selected for the reasons below.

Bringing power out of the Border Town Substation to feed the Stead area would not provide a 120 kV link between Silver Lake and Sugarloaf, so there would not be a power supply loop to meet the reliability and capacity needs of the Spanish Springs area. Additionally, the 120 kV loop from Tracy through Spanish Springs to Stead is required to prevent system overloads during outages. A system overload occurs when there is too much power flowing through the system and causes equipment to fail. The current 120 kV system has overloading problems caused by outages on the 345 kV system.

Lastly, bringing power out of the Border Town Substation to feed the Stead area requires a significant upgrade to the substation, which is not set up to provide for a 120 kV infrastructure. SPPCo estimates that the rebuild of 2.5 miles of 345 kV double circuiting and the 345/120 kV transformer additions at Border Town would cost approximately $6,000,000 additional dollars and, as discussed above, would still not meet all of the objectives of the purpose of and need for the project. For these reasons, the Border Town Substation Alternative was considered but eliminated.

Upgrading the Existing Stead Substation

Members of the public and cooperating agencies suggested upgrading the existing Stead substation in order to satisfy the needs of the future airport development. This alternative was determined not to be viable for the following two reasons:

- Efficiency of Feeder Distances/Future Development—In anticipation of industrial growth at and north of the Reno-Stead Airport, it is important that SPPCo establish distribution feeders in the immediate area. Distribution feeders from the existing Stead Substation would be less efficient due to the distance they would need to travel in order to serve the above-referenced area (especially if most of the growth occurred north of the airport). Other constraints include limited area within the existing Stead Substation necessary to add the appropriate electrical equipment, such as transformers, transmission lines entering the substation, and distribution feeders exiting the substation.
- Airport Authority Consultation—In consultation with the Airport Authority, it was determined that if an additional substation became necessary to serve the Reno-Stead Airport area, the most out of the way location would be the northwest corner.

Upgrading the Existing Silver Lake Substation

Members of the public and cooperating agencies suggested upgrading the existing Silver Lake Substation to satisfy the needs of the future airport development. This alternative was determined not to be viable for the following reasons:

- Efficiency of feeder distances/future development—In anticipation of industrial growth at and north of the Reno-Stead Airport, SPPCo must establish distribution feeders in the immediate area. Distribution feeders from the existing Stead Substation would be less efficient due to the distance they would need to travel in order to serve the above-referenced area (especially if most of the growth occurred north of the airport). Other constraints include limited area within the existing Stead Substation necessary to add the appropriate electrical

equipment, such as transformers, transmission lines entering the substation, and distribution feeders exiting the substation, and

- Space Constraints-There is not enough space to accommodate the required infrastructure.

Pah Rah Substation Location(s)

The public suggested locating the Sugarloaf Substation at several sites south of La Posada and east of Pyramid Highway. These locations were determined to be unsuitable because they were too far from the customer load center (ECI 2003). The load center in Spanish Springs is located approximately one mile north of the intersection of La Posada and Pyramid Highway. Substations should be located as close to the load center as possible in order to efficiently serve customer demand. Locating the substation too far from the load center results in the need for more and longer distribution lines, which in turn results in greater visual impacts, greater costs of construction, and an inefficient power distribution system, including greater system losses due to the increased length of distribution lines. Although this alternative meets the purpose and need for the area currently and in the near future, it does not meet the purpose and need for expected future growth to the north in the long term. The ECI report determined that "A substation location south of La Posada Road would make it more difficult to serve new loads as they develop north of La Posada Road."

Warm Springs Substation Location

During SPPCo's project development, the public suggested locating the proposed Sugarloaf Substation in the Warm Springs area. This location was determined to be too far from the projected load center to adequately serve the area (ECI 2003). The Proposed Sugarloaf Substation should ideally be located no more than six miles from the existing Spanish Springs Substation to maintain an efficient power distribution system. The Warm Springs location exceeds this six-mile threshold and exceeds a three-mile requirement to the load center. Thus, this was considered an inefficient alternative.

Granite Pit Substation Location

This alternative proposed to construct the substation at the site of a gravel pit west of Pyramid Hwy, off Highland Ranch Parkway. The transmission line would follow existing lines from Tracy to the Spanish Springs Substation, then follow the distribution line north along Pyramid Hwy to the site. This alternative was eliminated because it would be at the maximum advisable distance from the load center (as determined in a load center investigation by ECI in 2003). The load center was predicted to be located nearly three miles to the south and in the opposite direction of the projected growth to the north thus reducing the substations potential maximum efficiency. It also places two transmission circuits meant to back each other up in the same corridor, thereby reducing system reliability (ECI 2003).